

- c. an ion producing arrangement controlling energy of produced ions;
- d. a mass separator;
- e. an electron gun;
- f. an electron detector receiving secondary electrons;
- g. a holding arrangement for the semiconductor wafer;
- h. an ion current meter;
- i. an ion beam transport column;
- j. a quadrupole mass analyzer;
- k. an optical microscope; and
- l. a computer,

wherein a first axis of the ion beam transport column, a second axis of the optical microscope and a third axis of the electron gun are situated in a particular plane, the particular plane being substantially normal to a plane in which the semiconductor wafer is held by the holding arrangement when in a working position, the first, second and third axes intersecting at a particular point located on a first surface of the semiconductor wafer, and

wherein the computer controls scanning of an ion beam through a set of sites on the semiconductor wafer by moving the semiconductor wafer through predetermined site coordinates, the computer further displaying images of the first surface as a function of the secondary electrons received by the electron detector, the secondary electrons being generated by one of the ion beam and a scanning electron beam, the computer further superimposing a first raster of the ion beam and a second raster of the scanning electron beam on the images of the first surface.

5. (New) The system according to claim 4, wherein the ion beam transport column, the optical microscope and the electron gun face the first surface.
6. (New) The system according to claim 5, wherein an angle between the first, second and third axes is a minimal angle.
7. (New) The system according to claim 4, wherein the vacuum chamber achieves a